

Original Article

# Comparative analysis of depression, anxiety, stress, and eating disorders among working and nonworking women visiting community pharmacies in Lahore, Pakistan

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## Abstract

Anxiety and depression are common worldwide and often occur together. Anxiety can alter appetite, causing women to consume more food than usual, leading to changes in eating behavior and obesity. This comparative cross-sectional study compared the severity of depression, anxiety, stress, and eating disorders among working and nonworking women visiting community pharmacies. Data were collected through face-to-face interviews with 244 working women and 267 nonworking women. The data were analyzed using descriptive statistics, and a chi-square test was conducted to evaluate differences in the severity of depression, anxiety, stress, and eating disorders between the two groups of participants. Most participants were literate; approximately half of the working (50.82%) and nonworking women (55.06%) had a normal body mass index. There were significant differences between the working and nonworking women in terms of their education and physical activity levels ( $p < 0.05$ ). Both groups were identified as being at risk of developing bulimia, but their ability to control eating habits differed significantly ( $p = 0.008$ ). Most participants reported never using laxatives, diet pills, or diuretics to control their weight. Moreover, they reported that they had never received treatment for eating disorders or experienced thoughts of suicide. The study found no significant difference in depression ( $p = 0.085$ ) and anxiety levels ( $p = 0.207$ ) between working and nonworking women. However, a significant difference was found in stress levels between working and nonworking women ( $p = 0.001$ ). Our study highlights a significant prevalence of psychological issues among working and nonworking women in Pakistan, impacting their eating habits and contributing to developing eating disorders and obesity. Interestingly, working women display higher physical activity levels, while nonworking women demonstrate better oral control to prevent eating disorders. To improve women's mental and physical well-being, we recommend prioritizing mental health interventions for all women, promoting healthy eating habits, supporting physical activity, and investigating underlying factors influencing psychological well-being.

## Keywords

Women healthcare; Mental illnesses; Anxiety; Depression; Eating disorders

## 1. Introduction

Anxiety and depression are prevalent mental illnesses worldwide and often occur together [1]. Although these conditions do not present with physical signs and symptoms, they require prompt diagnosis and treatment by a specialized healthcare professional. In addition, women are more vulnerable to developing these conditions than men [2, 3]. According to the World Health Organization (WHO), depression was the fourth leading cause of disability in 2011. By 2020, it had become the second leading cause of mental

illness and disability worldwide, highlighting the increasing impact of this condition on global health [4].

Various factors contribute to mental illnesses among women, such as household environments, poor relationships, family responsibilities, workloads, peer pressure, and socioeconomic factors [5]. Nonworking women are particularly susceptible to such illnesses. In contrast, women living in nuclear families are more affected by anxiety than those in joint family systems. Additionally, factors such as lower wages, work stress, compromised working environments, and lower self-esteem contribute to mental illnesses among working women.

Anxiety and depression are prevalent psychological disorders that significantly impact an individual's appetite and are often observed in obese individuals [6]. Individuals suffering from anxiety or depression may exhibit excessive food consumption, leading to weight gain and obesity [7]. Women experiencing stress are inclined toward palatable food options, high in calories, carbohydrates, and fats, rather than adopting healthy eating habits, which makes them susceptible to changes in their eating behaviors. This predisposes them to increased body mass index (BMI) and consequent obesity [8, 9, 10]. These alterations in eating behaviors may lead to the development of complex and severe somatic and mental health conditions, such as anorexia nervosa and bulimia nervosa, which predominantly affect young females [11]. Empirical evidence has demonstrated a strong correlation between depression, anxiety, and maladaptive eating behaviors in women [12].

Understanding the impact of stress on an individual's health is challenging due to the intricate interplay between stress, behavior, and the endocrine and neural systems [13]. The effect of stress on health is believed to occur through two distinct but interconnected pathways: a direct biological pathway, which influences neuroendocrine and autonomic processes, and an indirect behavioral pathway, which affects habitual and non-habitual health behaviors [14]. Furthermore, the interrelation between these pathways is thought to be reciprocal, where changes in behavior can affect biological processes, and changes in biological processes can, in turn, impact behavioral changes that may affect health outcomes.

Anxiety, depression, stress, and eating disorders are prevalent mental health issues associated with various factors in Pakistani women. However, there is a lack of research comparing the severity of these disorders among working and nonworking women in Lahore, Pakistan. Understanding the impact of employment status on mental health can inform the development of targeted interventions to improve women's mental health outcomes.

This study aims to compare the severity of depression, anxiety, stress, and eating disorders among working and nonworking women visiting community pharmacies in Lahore. The hypothesis proposes that there might be variations in the occurrence of psychological issues between these two groups. Additionally, by investigating these mental health outcomes in relation to employment status, this study seeks to identify potential disparities and provide valuable insights for developing community pharmacy-based interventions to address mental health concerns within this population.

## 2. Materials and methods

### 2.1. Study design

This comparative cross-sectional study was conducted over four months, from December 2020 to March 2021, in a community of working and nonworking women in Lahore, Pakistan.

## 2.2. Ethical approval

The Ethics Review Committee of the University College of Pharmacy, University of the Punjab, Lahore, approved the study (No. EC/PUCP/099/2016).

## 2.3. Study setting

The study was conducted in Lahore, Pakistan, a densely populated city with a population of 11 million [15]. It included several branches of popular chain pharmacies regularly visited by working and nonworking women.

## 2.4. Participant recruitment

The study recruited 511 female participants aged 18 to 75, comprising 244 working and 267 nonworking women from diverse socioeconomic backgrounds, ethnicities, marital statuses, and religions. Participants were excluded from the study if they had impaired cognitive function, were above the age of 75 years, or declined to provide informed consent. This approach ensured the representation of a diverse population in the study sample while adhering to ethical guidelines for research involving human subjects.

## 2.5. Sampling technique and sample size

The study's sample size was determined using the WHO calculator with a significance level of 5% and test power of 95%. Based on anticipated population proportions of 0.04 and 0.18, the proportion of moderate depression among working women (3.9%) and nonworking women (17.6%) was derived from a previous study [16]. Initially, the sample size for each group was calculated as 103, but due to possible reasons such as potential dropouts, refusals to participate, or incomplete data, the sample size was increased to 275 for each group.

## 2.6. Questionnaire development and pilot testing

After an extensive literature review, the study questionnaire was designed, considering relevant constructs and items used in previously validated scales. It was further sent to a panel of experts consisting of health professionals and psychologists to ensure the questionnaire's content validity. To assess the questionnaire's psychometric properties, a pilot study was conducted involving 30 female participants, comprising 15 working and 15 nonworking individuals. The pilot study's purpose was to evaluate the questionnaire's reliability and validity. The participants completed the questionnaire, along with the Eating Attitude Test-26 (a Greek adaptation of the EAT-26) and the Depression Anxiety and Stress Scale (DASS21), which served as established measures for comparison. A Cronbach's alpha coefficient value of 0.78 was obtained, indicating acceptable internal consistency based on commonly accepted standards in the field, suggesting that items in the questionnaire consistently measure the same underlying construct.

## 2.7. Data Collection

Data were collected using a predesigned validated questionnaire administered through face-to-face interviews conducted by trained interviewers. The questionnaire was made available in both English and Urdu languages. Prior to the interviews, participants were informed about the study, and their willingness and consent were obtained. The interviews were conducted to ensure the consistency and accuracy of the collected data.

## 2.8. Study measures

The structured questionnaire collected information on participants' sociodemographics, physical activity status, presence of other diseases, and use of drugs/therapies. BMI was calculated using the formula weight in kilograms divided by height in meters squared [17], and the results were categorized according to the WHO BMI classification system into underweight, normal weight, overweight, and obesity groups [18]. In addition, physical activity status was determined based on WHO guidelines, which define physically active women who engage in weekly aerobic physical activity for 75 minutes or more of vigorous intensity, 150 minutes or more of moderate intensity, or a combination of both [19].

The Eating Attitude Test-26 assessed eating patterns and pathological concerns, including dieting, bulimia, food preoccupation, and oral control for dieting practices [20]. Responses to these questions were scored on a six-point Likert scale ranging from "always" to "never," and the cumulative score was reported as normal (less than 20) or pathological (more than 20) [21].

Behavioral measures were assessed by asking about binge eating, sickness when controlling weight, using laxatives and diuretics, treatment for eating disorders, and suicidal tendencies, with responses recorded as "yes" or "no" [20].

The Depression Anxiety and Stress Scale (DASS21) measured the participants' scores for depression, anxiety, and stress using a four-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much) based on their responses to each of the 21 questions [22]. First, the scores for each question were summed, resulting in a maximum subscale score of 21. Based on the obtained subscale score, these subscale scores were then categorized as normal, mild, moderate, severe, or extremely severe.

## 2.9. Data analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.00. Descriptive statistics were calculated for the obtained data. In addition, a chi-square test was conducted to compare the severity of depression, anxiety, stress, and eating disorders between working and nonworking women. Statistical significance was set at  $p < 0.05$ .

## 3. Results

Out of 511 women, 244 were working, while 267 were nonworking. Almost half of the participants (55.33% of working and 56.55% of nonworking women) were aged between 18 and 37 years (Table 1). Most working women (79.92%) and nonworking women (82.02%) lived in urban areas. Approximately half of the working (59.43%) and nonworking (55.81%) women were married. The majority of the participants (94.26% of working and 85.02% of nonworking women) were literate. Nearly half of the participants had a normal body mass index (50.82% working and 55.06% nonworking women). However, there were significant differences between working and nonworking women regarding their education and physical activity levels ( $p = 0.001$ ,  $p = 0.012$ ).

Table 2 shows that most working women (92.21%) and nonworking women (94.01%) exhibited normal attitudes toward dieting. However, both groups were found to be at risk of developing bulimia, with 94.26% of working women and 96.25% of nonworking women showing signs of the disorder. In addition, there was a significant difference in the ability to control eating habits between working women (85.66%) and nonworking women (92.88%) to prevent eating disorders. This difference in oral control between working and nonworking women regarding the risk of developing eating disorders was statistically significant ( $p = 0.008$ ).

**Table 1.** Sociodemographics of working and nonworking women (n = 511).

Characteristics		Working Women n = 244		Nonworking Women n = 267		p value **
		N	%	N	%	
Age	18 – 37 years	135	55.33	151	56.55	0.876
	38 – 56 years	57	23.36	64	23.97	
	57 – 75 years	52	21.31	52	19.48	
Area of residence	Urban	195	79.92	219	82.02	0.545
	Rural	49	20.08	48	17.98	
Marital status	Married	145	59.43	149	55.81	0.408
	Unmarried	99	40.57	118	44.19	
Education	Literate	230	94.26	227	85.02	0.001 **
	Illiterate	14	5.74	40	14.98	
BMI	Underweight	30	12.30	40	14.98	0.190
	Normal	124	50.82	147	55.06	
	Overweight	65	26.64	50	18.73	
	Obese	25	10.25	30	11.24	
Physically active	Yes	136	55.74	119	44.57	0.012 **
	No	108	44.26	148	55.43	
Concomitant disease	Yes	45	18.44	48	17.98	0.892
	No	199	81.56	219	82.02	
Taking any drugs/therapy	Yes	40	16.39	41	15.36	0.748
	No	204	83.61	226	84.64	

\* Variables are compared using the chi-square test. \*\* Significant at  $p < 0.05$ .**Table 2.** Eating attitude assessment of working and nonworking women (n = 511).

Eating Attitudes		Working Women n = 244		Nonworking Women n = 267		p value **
		N	%	N	%	
Dieting	Normal	225	92.21	251	94.01	0.422
	Pathological	19	7.79	16	5.99	
Bulimia and food preoccupation	Normal	230	94.26	257	96.25	0.288
	Pathological	14	5.74	10	3.75	
Oral control	Normal	209	85.66	248	92.88	0.008 **
	Pathological	35	14.34	19	7.12	

\* Variables are compared using the chi-square test. \*\* Significant at  $p < 0.05$ .

Table 3 shows that most working or nonworking women participants were not binge eaters (77.87% and 79.40%, respectively). Additionally, most respondents reported never getting sick while trying to control their weight (91.39% and 94.01%, respectively). The majority of participants also reported never using laxatives, diet pills, or diuretics for weight control, with percentages of 86.89% for working women and 90.64% for nonworking women. Furthermore, most participants reported never receiving treatment for eating disorders, with percentages of 91.39% for working women and 89.14% for nonworking women. Similarly, the majority of participants reported never having thoughts of or attempting suicide, with percentages of 95.08% for working women and 89.89% for nonworking women.

Table 4 presents the study's results on depression, anxiety, and stress levels among working and nonworking women. Of the 244 working women, 46.31% had normal depression levels, with 12.70%, 26.64%, 10.65%, and 3.68% experiencing mild, moderate, severe, and extremely severe levels, respectively. Similarly, among nonworking women,

43.45% had normal depression levels, with 13.48%, 20.22%, 14.98%, and 7.86% experiencing mild, moderate, severe, and extremely severe levels, respectively. The detailed percentage results for anxiety levels can be found in Table 4. For stress levels, 27.46% of working women had normal levels, while 7.79%, 25.81%, 18.03%, and 20.90% had mild, moderate, severe, and extremely severe levels, respectively. For nonworking women, 26.60% had normal stress levels, while 16.48%, 11.61%, 18.35%, and 26.97% had mild, moderate, severe, and extremely severe levels, respectively. The study found no significant difference in depression and anxiety levels between working and nonworking women ( $p > 0.05$ ). However, the study found a significant difference ( $p = 0.001$ ) in stress levels between the two groups.

**Table 3.** Eating behavior assessment of working and nonworking women (n = 511).

Eating Behaviors		Working Women n = 244		Nonworking Women n = 267		p value **
		N	%	N	%	
Binge eating with a feeling not able to stop	Yes	54	22.13	55	20.60	0.673
	No	190	77.87	212	79.40	
Got sick while controlling weight	Yes	21	8.61	16	5.99	0.255
	No	223	91.39	251	94.01	
Use of laxatives, diet pills or diuretics	Yes	32	13.11	25	9.36	0.178
	No	212	86.89	242	90.64	
Got treatment for eating disorders	Yes	21	8.61	29	10.86	0.391
	No	223	91.39	238	89.14	
Although of or attempted suicide	Yes	12	4.92	27	10.11	0.027 **
	No	232	95.08	240	89.89	

\* Variables are compared using the chi-square test. \*\* Significant at  $p < 0.05$ .

**Table 4.** Depression, anxiety, and stress scores among working and nonworking women (n = 511).

Characteristics		Working Women n = 244		Nonworking Women n = 267		p value **
		N	%	N	%	
Depression	Normal	113	46.31	116	43.45	0.085
	Mild	31	12.70	36	13.48	
	Moderate	65	26.64	54	20.22	
	Severe	26	10.66	40	14.98	
	Extremely severe	9	3.69	21	7.87	
Anxiety	Normal	84	34.43	89	33.33	0.207
	Mild	20	8.20	35	13.11	
	Moderate	57	23.36	45	16.85	
	Severe	38	15.57	46	17.23	
	Extremely severe	45	18.44	52	19.48	
Stress	Normal	67	27.46	71	26.60	0.001 **
	Mild	19	7.79	44	16.48	
	Moderate	63	25.81	31	11.61	
	Severe	44	18.03	49	18.35	
	Extremely severe	51	20.90	72	26.97	

\* Variables are compared using the chi-square test. \*\* Significant at  $p < 0.05$ .

#### 4. Discussion

This study aimed to compare the severity of depression, anxiety, stress, and eating disorders among working and nonworking women visiting community pharmacies in



Lahore. We included a substantial number of participants from both groups. Noteworthy differences between working and nonworking women regarding education and physical activity levels were observed. Both groups were found to be at risk of developing bulimia, although there were significant differences in their ability to control eating habits. No significant difference was found in depression and anxiety levels between the two groups. However, there was a notable difference in stress levels. These findings contribute to our understanding of women's mental and physical health in Pakistan and represent a significant strength of the study. However, it is important to acknowledge certain limitations. The study had a limited duration, and we could not explore the underlying reasons for mental health issues among women. These notable weaknesses should be considered when interpreting the study's findings.

Our study results are consistent with previous research investigating the link between depression and obesity in adults. In addition, the findings suggest that severe depression is a predictor of higher body mass index (BMI) scores, indicating a greater likelihood of obesity among depressed individuals than among those who are not depressed. Notably, the relationship between obesity and depression is stronger among females, and the association increases with higher socioeconomic status [23].

A US-based study focused on women with binge eating disorder (BED) and controls to explore how BED may mediate the relationship between anxiety, depression, and caloric intake in overweight and obese women. The results showed that symptoms of depression were significantly higher among women with BED than among controls. Additionally, symptoms of anxiety and depression were found to increase the likelihood of binge eating, leading to greater caloric intake, weight gain, and obesity [24]. Another US-based study found that obese individuals with higher anxiety levels consume more food than mild or nonobese individuals without anxiety. These findings suggest that anxiety may play a role in developing and maintaining obesity, potentially through increased caloric intake [25].

Based on a study conducted in Germany, individuals with binge eating disorder (BED) are more likely to have mood disorders, anxiety disorders, and depression and exhibit higher scores for emotional eating and food intake. The study also found that food intake and binge eating can improve the moods of individuals with BED. Additionally, anxiety and emotional eating are significant predictors of BED [26]. Another German study reported that individuals with BED displayed negative patterns of everyday emotions, scored higher in alexithymia, and had a strong desire to eat, particularly when experiencing interpersonal emotions. The study also identified anger, loneliness, disgust, and shame as being primarily associated with binge eating [27].

A Norwegian cohort study examined the relationship between symptoms of anxiety and depression and weight changes and found that women with anxiety and depression had a 0.98-kilogram increase in weight compared to women without mental health issues [28]. An Australian study investigated the association between obesity and emotional well-being, anxiety, and depression in different age groups of women. The study showed that anxiety and depression were linked to obesity among women. Furthermore, after adjusting for factors such as physical illness, physical inactivity, lower education, poor social support, and limited income, the study found that underweight women had more depression than obese women, who had better mental health [29].

Our findings do not align with a longitudinal study conducted in the US, which examined young adults from both black and white populations to assess the prevalence of BED, obesity, and depression. The study revealed that the overall prevalence of BED was 1.5% among both populations. However, the set of depression symptoms was higher among individuals with BED. In addition, the prevalence of BED was 2.9% among

women, with no significant difference in BED scores observed among white and black women [30].

Anxiety, depression, and other mental illnesses have increased food cravings, particularly for sweets and snacks, leading to overconsumption and potentially resulting in BED [31]. Changes in taste preferences may also play a role for individuals with mental disorders as a way of coping with their mental state [32]. Furthermore, anxiety and eating disorders often have common etiologies, which can increase an individual's susceptibility to both disorders, with overlapping symptoms and risk factors [33, 34].

## 5. Conclusions

In conclusion, our study indicates a substantial occurrence of psychological issues among both working and nonworking women, ranging from mild to extremely severe, which negatively impacts their eating habits and contributes to the development of eating disorders and obesity. Intriguingly, working women demonstrate higher physical activity levels, while nonworking women exhibit better oral control to mitigate the risk of eating disorders. These findings offer valuable insights into women's mental and physical health in Pakistan. However, further research is necessary to explore the qualitative factors contributing to the heightened occurrence of psychological issues in both groups and understand how these factors influence their eating attitudes and behaviors. Based on our findings, we recommend that healthcare professionals and policymakers in Pakistan prioritize mental health interventions for women, regardless of employment status. Such interventions should focus not only on identifying and managing psychological issues but also on promoting healthy eating habits and supporting maintaining physical activity levels. Additionally, future studies should explore the underlying factors contributing to the observed differences in psychological well-being and develop targeted interventions to address these factors. By addressing these recommendations, we can strive to improve women's mental and physical well-being in Pakistan.

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**Consent to participate:** All women who participated in this study provided informed consent prior to data collection.

**Data availability:** The data supporting this study's findings are available from Afifa upon reasonable request.

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## References

- [1] Kalin NH. The critical relationship between anxiety and depression. *Am J Psychiatry*. 2020;177(5):365-7. <https://doi.org/10.1176/appi.ajp.2020.20030305>
- [2] Arcand M, Juster RP, Lupien SJ, Marin MF. Gender roles in relation to symptoms of anxiety and depression among students and workers. *Anxiety Stress Coping*. 2020;33(6):661-74. <https://doi.org/10.1080/10615806.2020.1774560>



- [3] Hill D, Conner M, Clancy F, Moss R, Wilding S, Bristow M, et al. Stress and eating behaviours in healthy adults: a systematic review and meta-analysis. *Health Psychol Rev.* 2022;16(2):280-304. <https://doi.org/10.1080/17437199.2021.1923406>
- [4] World Health Organization. Depression and other common mental disorders: global health estimates. 2017 [cited 05 September 2022]. Available from: <https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf>.
- [5] Balaji A, Sarumathi V, Saranya N. A comparative study on depression among working and nonworking women in Chennai, Tamil Nadu, India. *Res Rev J Med Health Sci.* 2014;3(1):73-6.
- [6] Choi J. Impact of stress levels on eating behaviors among college students. *Nutrients.* 2020;12(5):1241. <https://doi.org/10.3390/nu12051241>
- [7] Espel HM, Muratore AF, Lowe MR. An investigation of two dimensions of impulsivity as predictors of loss-of-control eating severity and frequency. *Appetite.* 2017;117:9-16. <https://doi.org/10.1016/j.appet.2017.06.004>
- [8] Wallis DJ, Hetherington MM. Emotions and eating. Self-reported and experimentally induced changes in food intake under stress. *Appetite.* 2009;52(2):355-62. <https://doi.org/10.1016/j.appet.2008.11.007>
- [9] Zellner DA, Loaiza S, Gonzalez Z, Pita J, Morales J, Pecora D, et al. Food selection changes under stress. *Physiol Behav.* 2006;87(4):789-93. <https://doi.org/10.1016/j.physbeh.2006.01.014>
- [10] Diggins A, Woods-Giscombe C, Waters S. The association of perceived stress, contextualized stress, and emotional eating with body mass index in college-aged black women. *Eat Behav.* 2015;19:188-92. <https://doi.org/10.1016/j.eatbeh.2015.09.006>
- [11] Eisenberg D, Nicklett EJ, Roeder K, Kirz NE. Eating disorder symptoms among college students: prevalence, persistence, correlates, and treatment-seeking. *J Am Coll Health.* 2011;59(8):700-7. <https://doi.org/10.1080/07448481.2010.546461>
- [12] Rosenbaum DL, White KS. The relation of anxiety, depression, and stress to binge eating behavior. *J Health Psychol.* 2015;20(6):887-98. <https://doi.org/10.1177/1359105315580212>
- [13] Finch LE, Tiongo-Hofschneider L, Tomiyama AJ. Chapter 15 - stress-induced eating dampens physiological and behavioral stress responses. In: Watson RR, editor. *Nutrition in the prevention and treatment of abdominal obesity.* 2nd ed. London: Academic Press; 2019. p. 175-87.
- [14] O'Connor DB, Conner M, Jones F, McMillan B, Ferguson E. Exploring the benefits of conscientiousness: an investigation of the role of daily stressors and health behaviors. *Ann Behav Med.* 2009;37(2):184-96. <https://doi.org/10.1007/s12160-009-9087-6>
- [15] District Lahore. Government of Punjab. Area and Population. 2022 [Cited 05 September 2022]. Available from: [https://lahore.punjab.gov.pk/area\\_population](https://lahore.punjab.gov.pk/area_population)
- [16] Fernandes S, Angolkar M, Bagi GJ. Depression among married working women vs homemakers: a comparative study. *Int J Indian Psychol.* 2020;8(1):829-35.
- [17] World Health Organization. Obesity: preventing and managing the global epidemic. 1999 [cited 05 September 2022]. Available from: <https://apps.who.int/iris/handle/10665/42330>
- [18] World Health Organization. A healthy lifestyle - WHO recommendations. 2010 [cited 05 September 2022]. Available from: <https://www.who.int/europe/news-room/fact-sheets/item/a-healthy-lifestyle---who-recommendations>
- [19] World Health Organization. Physical activity. 2022 [cited 05 September 2022]. Available from: <https://www.who.int/news-room/fact-sheets/detail/physical-activity>
- [20] Garner DM, Garfinkel PE. The eating attitudes test: an index of the symptoms of anorexia nervosa. *Psychol Med.* 1979;9(2):273-9. <https://doi.org/10.1017/s0033291700030762>
- [21] Riebl SK, Subudhi AW, Broker JP, Schenck K, Berning JR. The prevalence of subclinical eating disorders among male cyclists. *J Am Diet Assoc.* 2007;107(7):1214-7. <https://doi.org/10.1016/j.jada.2007.04.017>
- [22] Parkitny L, McAuley J. The depression anxiety stress scale (DASS). *J Physiother.* 2010;56(3):204. [https://doi.org/10.1016/S1836-9553\(10\)70030-8](https://doi.org/10.1016/S1836-9553(10)70030-8)
- [23] Stunkard AJ, Faith MS, Allison KC. Depression and obesity. *Biol Psychiatry.* 2003;54(3):330-7. [https://doi.org/10.1016/s0006-3223\(03\)00608-5](https://doi.org/10.1016/s0006-3223(03)00608-5)
- [24] Peterson RE, Latendresse SJ, Bartholome LT, Warren CS, Raymond NC. Binge eating disorder mediates links between symptoms of depression, anxiety, and caloric intake in overweight and obese women. *J Obes.* 2012;2012:407103. <https://doi.org/10.1155/2012/407103>
- [25] Pine CJ. Anxiety and eating behavior in obese and non-obese American Indians and White Americans. *J Pers Soc Psychol.* 1985;49(3):774-80. <https://doi.org/10.1037/0022-3514.49.3.774>
- [26] Schulz S, Laessle RG. Associations of negative affect and eating behaviour in obese women with and without binge eating disorder. *Eat Weight Disord.* 2010;15:e287-93. <https://doi.org/10.1007/BF03325311>
- [27] Zeeck A, Stelzer N, Linster HW, Joos A, Hartmann A. Emotion and eating in binge eating disorder and obesity. *Eur Eat Disord Rev.* 2011;19(5):426-37. <https://doi.org/10.1002/erv.1066>
- [28] Brumpton B, Langhammer A, Romundstad P, Chen Y, Mai XM. The associations of anxiety and depression symptoms with weight change and incident obesity: the HUNT Study. *Int J Obes.* 2013;37:1268-74. <https://doi.org/10.1038/ijo.2012.204>
- [29] Jorm AF, Korten AE, Christensen H, Jacomb PA, Rodgers B, Parslow RA. Association of obesity with anxiety, depression and emotional well-being: a community survey. *Aust N Z J Public Health.* 2003;27(4):434-40. <https://doi.org/10.1111/j.1467-842x.2003.tb00423.x>
- [30] Smith DE, Marcus MD, Lewis CE, Fitzgibbon M, Schreiner P. Prevalence of binge eating disorder, obesity, and depression in a biracial cohort of young adults. *Ann Behav Med.* 1998;20(3):227-32. <https://doi.org/10.1007/BF02884965>
- [31] Penaforte FRO, Minelli MCS, Anastácio LR, Japur CC. Anxiety symptoms and emotional eating are independently associated with sweet craving in young adults. *Psychiatry Res.* 2019;271:715-20. <https://doi.org/10.1016/j.psychres.2018.11.070>

- 
- [32] Polivy J, Herman CP, McFarlane T. Effects of anxiety on eating: does palatability moderate distress-induced overeating in dieters?. *J Abnorm Psychol.* 1994;103(3):505-10. <https://doi.org/10.1037//0021-843x.103.3.505>
  - [33] Pallister E, Waller G. Anxiety in the eating disorders: understanding the overlap. *Clin Psychol Rev.* 2008;28(3):366-86. <https://doi.org/10.1016/j.cpr.2007.07.001>
  - [34] Swinbourne JM, Touyz SW. The co-morbidity of eating disorders and anxiety disorders: a review. *Eur Eat Disord Rev.* 2007;15(4):253-74. <https://doi.org/10.1002/erv.784>